

2007-VISVESVARAYA TECHNOLOGICAL UNIVERSITY

B.E MODEL EXAMINATION

ENGINEERING CHEMISTRY

(ELECTRONICS AND COMMUNICATION ENGINEERING)

TIME-3HOUR

MARK-80

ANSWER ANY FIVE QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

1 a. Describe Fischer-Tropsch method of synthesis of petrol.

b. Explain the process of doping of silicon

c. What is cracking? Explain fluidized catalytic cracking.

d. Discuss the mechanism of knocking.

2 a. Explain the origin of single electrode potential. Derive Nernst equation for the electrode potential.

b. What are reference electrodes? Mention the limitations of primary reference electrode and secondary reference electrodes.

c. Write a note on calomel electrode.

d. Represent the cell formed by the coupling of two copper electrodes immersed in the cupric sulphate solutions. Conc of cupric ions in one electrode system is 100 times more concentrated than the other. Write the cell reaction and calculate the potential at 300K.

3 a. Define fuel cell. How does it differ from a conventional galvanic cell?

b. Explain the following fuel cells:

1) molten carbonate 2) solid polymer electrolyte

c. Explain the following battery characters:

1. cycle life 2. shelf life 3. energy efficiency.

d. Describe the construction and working of zinc-air battery.

4 a. Define corrosion. Explain electrochemical theory of corrosion, taking iron as an example.

b. Explain differential metal corrosion with suitable example.

c. What is cathodic protection? Explain corrosion control by sacrificial anode method.

5 a. What is electroless plating? Mention its advantages.

b. Discuss the following factors influencing the nature of deposit:

1. Throwing power 2. pH of the electrolytic bath and 3. temp

c. Discuss the electroplating of gold and mention its applications.

d. Explain electroless plating of copper and its applications.

6 a. Distinguish between thermotropic and lyotropic liquid crystals with examples

b. Explain the working of liquid crystal in display.

c. What are the advantages of instrumental methods

d. Explain the estimation of amount of strong acid in a given solution conductometrically.

7 a. Define polymerisation. Explain solution and suspension polymerization techniques.

b. Give the synthesis, properties and uses of 1. Teflon 2. Butyl rubber

c. What are conducting polymers? Give the structure of polyaniline and mention its applications.

8 a. Discuss the types of impurities present in natural water.

b. Explain the determination of hardness of water by complexometric method.

c. Explain the electrolysis of desalination of water.

d. Discuss determination of chloride by Argentometric method.

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